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UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

FOREST INSECT INVESTIGATIONS

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FOREST INSECT SURVEY, SIERRA NATIONAL FOREST,

Seasons of 1937 - 1938

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by
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Berkeley, California
October 21, 1938

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Forest Insect Laboratory
Berkeley, California
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FOREST INSECT SURVEY, SIERRA NATIONAL FOREST

Seasons of 1937 - 1938

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FOREST INSECT SURVEY, SIERRA NATIONAL FOREST,

Seasons of 1937 - 1938.

A survey of forest insect conditions in the Sierra National Forest was made by the Bureau of Entomology and Plant Quarantine, Division of Forest Insects, during May, June, July and August, 1938. The entire cost of this survey was borne by the Bureau. The survey party consisted of E. F. Wohletz, C. W. Hanks and W. E. Bullard under the leadership of S. T. Carlson.

Methods of Survey

Loss cruises were made on five established Regional Survey Plots; an additional 320-acre plot was established in Hugh Ryan Canyon. The losses recorded on these sample areas (Table I, Appendix) are the bases for estimates (Table II, Appendix) of the losses on Unit Areas (Map, Appendix). The 1938 estimates are subject to revision in that all of the losses for that year were not apparent at the time the survey was made. Some concern is felt too of the infestation that may result from the broods that developed in the numerous pines that were up-rooted during the winter of 1937-38. Losses of the true firs and incense cedar were also recorded.

Infestation types were studied and recorded from analyses of infested trees on the Lewis Creek and Bass Lake Recreational Areas control jobs; additional data were obtained by felling currently infested trees in the sample plot areas.

General Infestation Conditions

There was a general increase of insect infestations during 1937 over that of 1936. The 1936 infestations are expected to show additional increases where the trend was upward in 1937. The 1937-38 losses are confined largely to the better sites and are concentrated in the large mature trees.

Certain areas, such as Fence Meadow, Placer and Jackass, are approaching infestations of a critical nature, and if a continued increase is shown, control measures are advisable.

Infestation Characteristics and Tendencies

Infestations during 1937 and so far in 1938, have been confined to the pine types of higher elevations and of better sites. The

loss consequently is much greater.

The pine engraver beetle (Ips spp.) and the flatheaded borer (Melanophila spp.) were of minor importance as primary insects. In most cases, attacks in the pines were initiated by either the western pine beetle, Dendroctonus brevicomis Lec., or the Mountain pine beetle, Dendroctonus monticolae Hopkins. Topkills by Ips were rare and restricted almost entirely to certain warm localities in the fringe type.

Control.

During the spring of 1938, three control jobs (Map, Appendix) in the ponderosa pine type were completed by relief labor and CCC crews working under the direction of experienced forest officers. This work was reported by assistant supervisor J. M. Buck in a memorandum dated June 22, 1938. Control work of this type (maintenance) has been very successful in keeping losses to a minimum and is applicable to areas of high use and recreational value. The following is a summary of these jobs:

Project	Area (acres)	Species	No. trees	Vol. BM	Insects
Lewis Creek Recreational Area	780	Ponderosa pine	124	22,500	D.b. - Ips
Bass Lake Recreational Area	2,500	Ponderosa pine	226	33,700	D.b. - Ips
Whiskey, Ross, & Rock creeks	3,500	Ponderosa pine	42	39,560	D.b. - Ips
Total	6,780		392	95,760	

Conditions in Unit Areas

The principal forested areas of this forest have been divided into entomological units for convenience in reporting the infestations, and the losses for these areas have been estimated. Table II and a map (appended) show the losses 1936-38 on the outlined areas.

Hugh Ryan Unit. Endemic losses have been recorded in this unit. The losses in sugar pine were not apparent for 1937 and it is likely that they will be very light in 1938. The 1937 loss is 22 trees per section and is composed of 16 ponderosa pine, 4 white fir, and 2 incense cedar. The estimated loss for 1938 compares favorably with that of previous years.

Jackass Unit. The infestations during 1937-38 show an increase of almost 50% over that of 1936. Ponderosa pine losses have been the greatest, and there has been a tendency towards grouping of infested trees.

Placer Unit. Infestations of 1937-38 have shown a decided increase in this unit and are pointing towards epidemic proportions. There is a marked grouping of infested trees throughout the area. Unless conditions unfavorable to brood development occur in 1938, the outlook is for a continued increasing infestation.

Rock Creek. The infestation in this unit has shown a steady decline for the past two years. The control work of the spring of 1938 should be a great aid in keeping the insect population down.

Cascadel Unit. Recent infestations have shown a decline here to extremely low proportions. The depleted condition of the stand in this unit plus the shift in infestations to better sites accounts for the decline.

Bass Lake. Endemic conditions prevail in this unit. The recreational value of the pine forest here is exceptionally high and warrants every measure of protection available to these stands. The control work during the spring of 1938 should help considerably to keep losses endemic.

Fence Meadow. Insect losses show an abrupt increase in this unit for 1937-38. The 1938 loss, though not completely estimated, indicates an increase over 1937. The infestations in this unit have shown a tendency for sudden seasonal changes. Ponderosa pine losses have been highest, although sugar pine losses have increased at a similar rate. If continued or sustained infestations occur here, control work is advisable.

Blue Canyon. The infestation trend in this unit has shown abrupt seasonal changes from time to time. The 1937 loss, for instance, is only 20% of the 1936 loss while the 1938 loss is equal to that of 1936. Due to the fact that a large part of the mature trees have already been killed here, infestations are not expected to increase to any alarming extent.

Recommendations.

Artificial control measures are not recommended at this time other than in the recreational areas or in areas of high use, where maintenance control as performed in the past is strongly recommended. Infestations, however, in such areas as Placer, Jackass and Fence Meadow have shown an abrupt increase and will bear close watching. The extension of the present losses will warrant control measures.

TABLE I. MEASURED SAMPLE PLOT LOSSES, SIERRA NATIONAL FOREST. 1936-1938

Unit	Area (acres)	Tree species	1936			1937			1938 (Not complete)		
			No. trees	Vol.BM	Vol./A	No.trees	Vol.BM	Vol/A	No.trees	Vol.BM	Vol./A
*Hugh Ryan	320	Ponderosa pine				8	4,550	14			
		Sugar pine									
		TOTAL				8	4,550	14			
		White fir				2	390	1			
		Incense cedar				1	250	1	1	130	
Jackass	320	Ponderosa pine	4	4,500	14	11	25,600	80	6	14,950	47
		Jeffrey pine				1	1,100	3			
		Sugar pine	3	10,360	32	2	11,070	35	4	1,540	5
		TOTAL	7	14,860	46	14	37,770	118	10	16,490	52
		White fir	1	3,640	11	3	9,590	30	1	110	
		Incense cedar				1	1,520	5	1	1,120	4
Placer	320	Ponderosa pine	5	6,240	20	13	7,550	24	5	6,980	21
		Jeffrey pine	7	4,540	14	16	10,010	31	6	9,460	30
		Sugar pine									
		TOTAL	12	10,780	34	29	17,560	55	11	16,440	51
		Incense cedar				3	970	3			
Cascadel	320	Ponderosa pine	13	11,250	35	12	10,560	33	1	810	3
		Sugar pine							1	80	
Fence Meadow	320	Ponderosa pine	10	30,020	94	35	61,460	192	18	56,200	176
		Sugar pine	2	2,360	7	5	1,570	5	7	39,400	123
		TOTAL	12	32,380	101	40	63,030	197	25	95,600	299
		White fir				4	19,700	62			
		Incense cedar				2	1,120	4			
Blue Canyon	160	Ponderosa pine	4	4,350	14	1	2,220	7	4	6,830	43
		Sugar pine							1	2,920	18
		TOTAL	4	4,350	14	1	2,220	7	5	9,750	61
		White fir									
		Incense cedar				1	1,920	12	1	160	1

* Plot established in 1937.

TABLE II.
ESTIMATED LOSSES, PONDEROSA PINE - SUGAR PINE BY UNITS.
SIERRA NATIONAL FOREST
1936 - 1938

Unit	Timbered Acres	1936		1937		1938	
		No. trees	Vol. BM	No. trees	Vol. BM	No. trees	Vol. BM
Hugh Ryan	5,000	40	48,000	128	153,600	104	124,800
Jackass	10,200	320	576,000	448	806,400	320	576,000
Placer	16,000	250	212,000	1,450	1,132,500	550	467,500
Rock Creek	10,200	320	384,000	220	264,000	200	240,000
Cascadel	7,600	180	126,000	288	191,600	24	16,800
Bass Lake	8,900	70	42,000	65	33,000	75	45,000
Fence Meadow	7,600	20	46,000	960	2,208,000	600	1,380,000
Blue Canyon	6,400	200	320,000	40	64,000	200	320,000
TOTAL	71,900	1,400	1,754,000	3,599	4,853,100	2,073	3,170,100
Unit Average	8,987.5	175	219,250	450	606,638	259	396,263
Average per acre		.02	24	.05	67	.03	44

U. S. BUREAU OF ENTOMOLOGY
AND PLANT QUARANTINE

SIERRA NATIONAL FOREST

CALIFORNIA

UNITS

1. HUGH RYAN
2. JACKASS
3. PLACER
4. ROCK CREEK
5. CASCADEL
6. BASS LAKE
7. FENCE MEADOW
8. BLUE CANYON

1938 CONTROL PROJECTS